

doned vessel foundered on the 28th 250 miles southwest of Cape Horn. *South Pacific Ocean*.—On June 29th, 1879, severe SE. gales prevailed on the coast of New Zealand, during which ship B. L. and brig Akbar were driven ashore. *Indian Ocean*.—On June 19th, 1879, ship St. Charles, while off south end of Madagascar, had cyclone lasting 12 hours, during which the wind veered from ENE. to SSE. From June 30th to July 7th, severe westerly gales and high seas were experienced off the Cape of Good Hope.

TEMPERATURE OF THE AIR.

The isothermal lines upon Chart No. II., show the general distribution of the temperature for the month of September, 1879, accompanying which is a table of comparative temperatures. The temperature has been decidedly below the normal over the eastern section of the country. This deviation has been least along the immediate Atlantic coast, from Cape May to Eastport, while over Nova Scotia and Cape Breton the temperature has been slightly in excess. Over the Southern States east of the Mississippi and in Arkansas, Missouri, Iowa, Dakota, and northern Michigan, the deviation has ranged from 1° to 2°, while over the Upper Mississippi and Ohio Valleys and larger part of the Lake Region the mean temperature of the month has been from 3° to 4° below the average of the past seven or eight years. Over the northern portion of Texas and Indian Territory and over the Rocky Mountain Region and Western Plateau a decided excess in temperature has occurred, amounting to 5° at Corsicana and on the summit of Pike's Peak; 4°·7 at Salt Lake City; 6°·2 at Virginia City; and 6°·8 at Boise City. The highest and lowest temperatures, as recorded during the month, by the maximum and minimum thermometers in use at the Signal Service stations show the temperature to have risen above 100° over the interior of California, southern portion of Arizona, and interior of Texas; over 90° at stations on the Western Plateau, (except Pioche, 88°) in New Mexico, over the eastern slope of the Rocky Mountains as far north as Nebraska, as well as over portions of Montana and Dakota, along the Gulf and Atlantic coasts and over the western portions of Pennsylvania and New York; to or over 80° at all other stations except Breckenridge, Duluth, St. Paul, Marquette, Escanaba, Grand Haven, and outlying stations on the immediate coast of New England. The highest temperatures occurred in California from the 11th to the 16th; in the Lower Missouri, Upper Mississippi and Lower Ohio valleys, and Upper Lake Region from the 26th to the 30th; elsewhere very generally from the 1st to the 10th. The highest recorded was 113° at Yuma, Arizona. The minima show the temperature to have fallen below 30° from Montana and Wyoming to northern Minnesota and over the northern part of Lower Michigan; below 40° over northern Nevada, Idaho, and from Northern Colorado to the interior of the Middle States and New England, except along the southern shore of Lake Erie; below 50° at elevated stations in California, and from Nevada to New Mexico, Missouri, and northern portions of Georgia and South Carolina; and below 60° at all stations except those in the Lower Rio Grande Valley, along the immediate Gulf coast, and at Jacksonville, Fla. From the Northwest to the Atlantic coast the lowest temperatures were experienced from the 23rd to the 27th; over the Southwest from the 13th to 20th, and over California and the Western Plateau from the 23rd to the 30th. The three lowest recorded were 20° on summit of Pike's Peak; 19° at Pembina; and 11° on the summit of Mt. Washington. Below are given the highest and lowest temperatures observed by Signal Service and voluntary observers, arranged by States, those by voluntary observers being marked with a (*) star.

Minima Temperatures.—*Maine*: 26° at *Orono and 37° at Eastport. *New Hampshire*: 11° at Mount Washington. *Vermont*: 30° at *Lunenburg and *Strafford. *Massachusetts*: 30° at *Amherst, *Rowe, *Walham and 31° at Springfield. *Rhode Island*: 41° at Newport. *Connecticut*: 34° at *Southington. *New York*: 26° at *Nile and 33° at Albany. *Pennsylvania*: 22° at *Wellsboro and 35° at Pittsburgh. *Delaware*: 48° at *Dover. *Maryland*: 34° at *Woodstock, *New Market, *Emmitsburg and 40° at Baltimore. *District of Columbia*: 38° at Washington. *Virginia*: 32° at *Snowville, and 38° at Fort Whipple. *West Virginia*: 39° at Morgantown. *North Carolina*: 36° at *Ashville, *Franklin and 43° at Charlotte. *South Carolina*: 46° at *Spartanburgh and 54° at Charleston. *Georgia*: 44° at Atlanta. *Florida*: 60° at St. Marks. *Alabama*: 46° at *Wilsonville and 53° at Montgomery. *Mississippi*: 57° at Vicksburg. *Louisiana*: 55° at Shreveport. *Texas*: 45° at Davis. *Ohio*: 31° at Westerville and 37° at Columbus. *Kentucky*: 44° at Louisville. *Tennessee*: 42° at Nashville and *Ashwood. *Arkansas*: 45° at *Mount Ida. *Michigan*: 30° at *Thornville, *Lansing, Grand Haven and Alpena. *Indiana*: 34° at *Logansport and *Wabash. *Illinois*: 30° at *Elmira and 39° at Chicago. *Missouri*: 38° at *Corning and 41° at St. Louis. *Kansas*: 32° at *Holton and 43° at Leavenworth. *Wisconsin*: 23° at *Neillsville and 35° at Milwaukee. *Iowa*: 24° at *Ames and 34° at Des Moines. *Nebraska*: 28° at *De Soto and 34° at North Platte. *Indian Territory*: 46° at Fort Sill. *Minnesota*: 24° at Breckenridge. *Dakota*: 19° at Pembina. *Colorado*: 20° at Pike's Peak and 38° at Denver. *New Mexico*: 42° at Santa Fe and La Mesilla. *Wyoming*: 30° at Cheyenne. *Utah*: 33° at *Coalville. *Nevada*: 33° at Winnemucca. *Arizona*: 44° at Prescott. *Idaho*: 36° at Boise City. *California*: 32° at Campo, 47° at Los Angeles, 52° at San Francisco and Sacramento. *Oregon*: 39° at Roseburg.

Maxima Temperatures.—*Maine*: 85° at Portland. *New Hampshire*: 89° at *Grafton. *Vermont*: 85° at Burlington. *Massachusetts*: 89° at Boston. *Rhode Island*: 76° at Newport. *Connecticut*: 82° at New Haven. *New York*: 90° at Rochester and 95° at *Waterburg. *Pennsylvania*: 90° at Pittsburgh and 94° at *Wellsboro. *Delaware*: 82° at *Dover. *Maryland*: 85° at Baltimore. *District of Columbia*: 87° at Washington. *Virginia*: 90° at Norfolk. *West Virginia*: 84° at Morgantown. *North Carolina*: 92° at Wil-

Those marked with * are voluntary reports.

mington. *South Carolina*: 89° at Charleston. *Georgia*: 91° at Augusta. *Florida*: 90° at Jacksonville and 91° at Key West. *Alabama*: 91° at Mobile. *Mississippi*: 93° at Vicksburg. *Louisiana*: 95° at *Okalooska. *Texas*: 104° at *Mesilla. *Ohio*: 88° at *Bellefontaine, *Ruggles and *Ringgold. *Kentucky*: 83° at Louisville. *Tennessee*: 88° at Knoxville. *Arkansas*: 88° at Little Rock. *Michigan*: 85° at Alpena. *Indiana*: 80° at Indianapolis and 84° at *Laconia. *Illinois*: 86° at *Peoria and *Anna. *Missouri*: 93° at *Independence. *Kansas*: 97° at *Holton. *Wisconsin*: 82° at *Beloit. *Iowa*: 90° at *Vail. *Nebraska*: 93° at *Howard. *Indian Territory*: 95° at Fort Sill. *Minnesota*: 78° at St. Paul. *Dakota*: 95° at Ft. Buford. *Colorado*: 89° at Denver. *New Mexico*: 105° at La Mesilla. *Wyoming*: 87° at Cheyenne. *Utah*: 91° at Salt Lake City. *Nevada*: 97° at *Carson City. *Arizona*: 113° at Yuma. *Idaho*: 92° at Boise City. *California*: 92° at San Diego and 105° at Red Bluff. *Oregon*: 90° at Roseburg.

Ranges of Temperature at Signal Service Stations.—The monthly ranges will appear from an examination of the maxima and minima just given. The greatest daily ranges vary in New England from 16° at Wood's Holl to 19° on Mt. Washington and 29° at Boston; Middle Atlantic States, from 20° at Barnegat to 33° at Washington; South Atlantic States, from 13° at Portsmouth, N. C., to 25° at Jacksonville, and 31° at Charlotte; Gulf States, from 13° at Key West to 17° at New Orleans and 33° at Corsicana; Ohio valley and Tennessee, from 25° at Cairo, Louisville and Cincinnati to 37° at Pittsburgh and Knoxville; Lower Lake region, from 20° at Toledo to 30° at Rochester; Upper Lake region, from 23° at Madison to 30° at Chicago and Duluth and 33° at Alpena; Upper Mississippi valley, from 24° at Springfield, Ill., to 31° at St. Paul and 33° at Des Moines; Lower Missouri valley, from 30° at Leavenworth to 38° at Yankton; Northwest, from 41° at Bismarck to 46° at Pembina; Eastern Rocky Mountain slope, from 31° at Denison, 38° at Fort Sill to 35° at Deadwood and 46° at North Platte; Rocky Mountains, from 26° on Pike's Peak to 40° at Santa Fé and 44° at Cheyenne; Plateau Districts, from 34° at Pioche to 39° at Boise City and 54° at Winnemucca; California, from 26° at San Francisco to 36° at Los Angeles and 40° at Red Bluff and Visalia.

Frosts—were quite frequent over the northern portions of the country, and during the latter part of the month very generally destructive to vegetation, as will be seen from the following summary: On the 26th and 27th, they were experienced as far south as Tennessee, Georgia and South Carolina. In New England frosts occurred on the 5th, 7th, 10th and from the 20th to 27th, and were destructive to vegetation on the 21st, 25th, 26th and 27th. In New York and Pennsylvania, from the 4th to the 28th; destructive, 11th, 12th, 21st, 25th, 26th, 27th. Maryland, Virginia and West Virginia, 10th, 11th, 25th, 26th, 27th. North Carolina, 24th, 25th, 26th, 27th, 28th. South Carolina and Georgia, 26th and 27th. Tennessee, 14th and 26th. Ohio valley, 5th, 9th, 10th, 11th, 15th, 19th, 21st, 25th, 26th; destructive, 15th, 25th and 26th. Lower Lakes, 4th to 29th; destructive, 11th, 12th, 24th and 25th. Upper Lake region, 5th, 7th, 8th, 9th, 10th, 11th, 15th, 17th to 26th; destructive, 5th, 7th, 19th, 20th, 21st, 24th, 25th. Upper Mississippi valley, 4th to 26th; destructive, 14th, 19th, 20th, 24th, 25th and 26th. Lower Missouri valley, 6th, 8th, 12th, 13th, 17th, 18th, 20th, 24th; destructive, 20th and 24th. Extreme Northwest, 3rd, 4th, 5th, 7th, 8th, 12th, 18th, 19th, 20th, 22nd, 23rd, 24th, 29th, 30th. Colorado, at Summit, every night; summit of Pike's Peak, 3rd, 12th, 13th, 20th, 25th. Idaho, 11th, 12th, 30th. Utah, 26th, 27th. Nevada, 11th, 12th, 13th, 27th, 30th.

Ice occurred as follows:—On the 9th, at Neillsville, Wis., $\frac{1}{8}$ of an inch in thickness. 12th, Winnemucca, Nev. On the 13th, at Pembina, on pools. 14th, Cresco, Ia., $\frac{1}{10}$ in., and at Port Madison, Ia., $\frac{1}{8}$ in. 17th, Idaho City, Idaho. 19th, Cresco, Ia., $\frac{1}{4}$ in., Nora Springs, Ia., and Litchfield, Mich. 20th, Belvidere, Ill., Litchfield, Mich., Plattsmouth and Genoa, Neb., and Burlington, Ia. 21st, Litchfield, Mich., and Waterburg, N. Y. 23rd, Logansport, Ind.; Pembina, 1 inch; Clear creek, Neb. 24th, Muscatine and Burlington, Ia.; Independence, Ia., $\frac{1}{8}$ in.; Niles, Mich., $\frac{1}{4}$ in.; Litchfield and Ypsilanti, Mich.; Howard, Genoa and Clear Creek, Neb.; Pembina; Hanover, N. H. 25th, Elmira, Ill.; Belvidere, Ill., $\frac{1}{2}$ inch; Wabash, Ind.; Litchfield and Hudson, Mich.; Ashley, Mo.; Ithaca, N. Y., $\frac{1}{4}$ inch; Nile, N. Y., $\frac{1}{8}$ in.; Urbana, Ohio; Pittsburg, $\frac{1}{10}$ in.; Burlington, Vt. 26th, Gardiner, Me.; Eastport, $\frac{1}{8}$ in.; Westborough, Mass., $\frac{1}{8}$ in.; Linden and Somerville, N. J.; Waterburg and Palermo, N. Y.; Hulmesville, Pa.; Woodstock and Burlington, Vt., $\frac{1}{4}$ in; Contoocookville, N. H., $\frac{1}{2}$ in. 27th, Coalville, Utah, $\frac{1}{4}$ in. 30th, Winnemucca.

Ground was frozen on the 24th at Litchfield, Mich.; on the 25th, at Contoocookville, N. H., Williston Vt., and Litchfield, Mich.; 26th, at Strafford, Vt.; Dyberry, Pa., to a depth of 1 inch.

PRECIPITATION.

The general distribution of rainfall for the month is illustrated as accurately as possible on Chart No. III, from about 500 Signal Service and voluntary reports; it is accompanied by a table giving the average precipitation for the month of September by districts, which shows the rainfall for the month to have been in excess in the South Atlantic and Eastern Gulf States, and on the coast of Oregon. In the Northwest and the Middle Atlantic States, this table shows a decided deficiency, but by reference to the chart, other extensive areas, not included in these districts, will be found to have experienced a great want of rain, which, however, in taking an average of the district, have been compensated for by heavy rains in some other portions of the same district. Thus in the Eastern Gulf States, while a large part of Mississippi had over six inches portions of Alabama and Georgia had less than one inch, and this applies to nearly all the different sections. In consequence of this uneven distribution of rain, severe droughts have occurred and great loss has resulted to stock and crops. This is especially the case in portions of Pennsylvania, Virginia and North Carolina, in Illinois, Missouri, Indian Territory and Texas and in Utah. Special reference to these will be found under the proper heading.